

WHAT IS CLAIMED IS:

1. An electrophoretic display comprising a plurality of cells having side walls wherein said cells are filled with an electrophoretic fluid comprising charged particles dispersed in a dielectric solvent or solvent mixture and said cells are individually sealed with a polymeric sealing layer.

2. The electrophoretic display of Claim 1 wherein said cells are partially filled with said electrophoretic fluid.

3. The electrophoretic display of Claim 1 wherein said polymeric sealing layer forms a contiguous film on the fluid and is in intimate contact with both the fluid and the peripheral of the walls of said cells that are not covered by the fluid.

4. The electrophoretic display of Claim 1 wherein said polymeric sealing layer extends over the top surface of the side walls of said cells.

5. The electrophoretic display of Claim 4 wherein said polymeric sealing layer forms a contiguous film on the top of the sealed cells.

6. The electrophoretic display of Claim 1 wherein said sealing layer is formed from a composition comprising a material selected from the group consisting of polyvalent acrylate or methacrylate, cyanoacrylates, polyvalent vinyl including vinylbenzene, vinylsilane, vinylether, polyvalent epoxide, polyvalent isocyanate, polyvalent allyl, and oligomers or polymers containing crosslinkable functional groups.

7. The electrophoretic display of Claim 6 wherein said composition further comprises an additive selected from the group consisting of surfactants, antioxidants, initiators, catalysts, crosslinkers, thickeners, polymer binders, pigments, dyes and fillers.

8. The electrophoretic display of Claim 7 wherein said filler is silica, CaCO_3 , BaSO_4 , TiO_2 , metal particles and their oxides or carbon black.

9. The electrophoretic display of Claim 3 wherein part of said sealing layer is in contact with the side walls of said cells and the top surface of the cell walls is at least about 0.01μ (micrometer) above the top surface of the electrophoretic fluid.

10. The electrophoretic display of Claim 9 wherein the top surface of said cell walls is about 0.02μ to about 15μ above the top surface of the electrophoretic fluid.

11. The electrophoretic display of Claim 10 wherein the top surface of said cell walls is about 0.1μ to about 4μ above the top surface of the electrophoretic fluid.

12. The electrophoretic display of Claim 4 wherein the top surface of said sealing layer is at least about 0.01μ above the top surface of said cell walls.

13. The electrophoretic display of Claim 12 wherein the top surface of said sealing layer is about 0.01μ to about 50μ above the top surface of said cell walls.

14. The electrophoretic display of Claim 13 wherein the top surface of said sealing layer is about 0.5μ to about 8μ above the top surface of said cell walls.

15. The electrophoretic display of Claim 1 wherein said sealing layer has a thickness in the range of from about 0.1μ to about 50μ as measured in the center of said cell.

16. The electrophoretic display of Claim 15 wherein said sealing layer has a thickness in the range of from about 0.5μ to about 15μ as measured in the center of said cell.

17. The electrophoretic display of Claim 16 wherein said sealing layer has a thickness in the range of from about 1μ to about 8μ as measured in the center of said cell.

18. An electrophoretic display which comprises:
a) two electrode plates;
b) an array of cells having side walls that are sandwiched between the two electrode plates, each of said cells is filled with an electrophoretic composition comprising charged particles dispersed in a dielectric solvent or solvent mixture and individually sealed with a polymeric sealing layer.

19. The electrophoretic display of Claim 18 further comprising an adhesive layer between the top of said polymeric sealing layer and one of said electrode plates.

20. The electrophoretic display of Claim 19 wherein said polymeric sealing layer is formed from a composition comprising a material selected from the group consisting of polyvalent acrylate or methacrylate, cyanoacrylates, polyvalent vinyl including vinylbenzene, vinylsilane, vinylether, polyvalent epoxide, polyvalent isocyanate, polyvalent allyl, and oligomers or polymers containing crosslinkable functional groups.

21. The electrophoretic display of Claim 20 wherein said composition further comprises one or more additive selected from the group consisting of surfactants, antioxidants, initiators, catalysts, crosslinkers, thickeners, polymer binders, pigments, dyes and fillers.

22. The electrophoretic display of Claim 21 wherein said filler is silica, CaCO_3 , BaSO_4 , TiO_2 , metal particles and their oxides or carbon black.

23. The electrophoretic display of Claim 18 wherein part of said sealing layer is in contact with the side walls of said cells and the top surface of the cell walls is at least 0.01μ above the top surface of the electrophoretic fluid.

24. The electrophoretic display of Claim 23 wherein the top surface of said cell walls is about 0.02μ to about 15μ above the top surface of the electrophoretic fluid.

25. The electrophoretic display of Claim 24 wherein the top surface of said cell walls is about 0.1μ to about 4μ above the top surface of the electrophoretic fluid.

26. The electrophoretic display of Claim 18 wherein the top surface of said sealing layer is at least about 0.01μ above the top surface of said cell walls.

27. The electrophoretic display of Claim 26 wherein the top surface of said sealing layer is about 0.01μ to about 50μ above the top surface of said cell walls.

28. The electrophoretic display of Claim 27 wherein the top surface of said sealing layer is about 0.5μ to about 8μ above the top surface of said cell walls.

29. The electrophoretic display of Claim 18 wherein said sealing layer has a thickness in the range of from about 0.1μ to about 50μ as measured in the center of said cell.

30. The electrophoretic display of Claim 29 wherein said sealing layer has a thickness in the range of from about 0.5μ to about 15μ as measured in the center of said cell.

31. The electrophoretic display of Claim 30 wherein said sealing layer has a thickness in the range of from about 1μ to about 8μ as measured in the center of said cell.

32. The electrophoretic display of Claim 19 wherein said adhesive layer is a pressure sensitive adhesive, a hot melt adhesive, a heat, moisture, or radiation curable adhesive.

33. The electrophoretic display of Claim 32 wherein said adhesive layer is formed from a material selected from a group consisting of acrylics, styrene-butadiene copolymers, styrene-butadiene-styrene block copolymers, styrene-isoprene-styrene block copolymers, polyvinylbutyal, cellulose acetate butyrate, polyvinylpyrrolidone, polyurethanes, polyamides, ethylene-vinylacetate copolymers, epoxides, multifunctional acrylates, vinyls, vinylethers, and their oligomers, polymers, and copolymers.

34. The electrophoretic display of Claim 19 wherein said sealing layer and said adhesive layer are formed from the same material.

35. The electrophoretic display of Claim 34 wherein said material is a radiation curable material.

36. The electrophoretic display of Claim 19 wherein said sealing layer and said adhesive layer are formed from different materials.